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Weather

USAF ACADEMY WEATHER SUPPORT

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This instruction implements AFD 15-1, *Atmospheric and Space Environmental Support*, by establishing procedures for the Academy Base Weather Station (through government contract for meteorological services F05611-00-C0001) to provide weather support to the USAF Academy, including tenant organizations. This instruction applies to all organizations located at the Air Force Academy. Units are responsible to maintain and dispose of electronic or paper records created as a result of prescribed processes in accordance with AFMAN 37-139, *Records Disposition Schedule*. See **Attachment 1** for listing of Acronyms and Terms.

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1. Academy Weather Responsibilities. Academy Weather (also referred to as Base Weather), through government contract weather service, provides operational weather observations and forecasts to the USAFA to support cadet and flying activities and to protect people and government resources. Academy Weather combines data from the Air Force Weather Agency (AFWA) and National Weather Service (NWS) with local analysis to produce forecasts for operational decision-makers. The Weather Forecast Section provides a variety of weather forecast products including: Terminal Aerodrome Forecasts (TAFs), forecast weather warnings and advisories, severe weather watches, upper-level wind observations from the Acoustic Sounder, and aircrew briefing service to Academy agencies. The observing section provides current surface weather reports (observations), observed weather advisories, and observed weather warnings for lightning to Academy agencies. The 25th Operational Weather Squadron (25 OWS), located at Davis-Monthan AFB, AZ, has agreed to provide resource protection during the hours that Academy Weather is not open (Memorandum of Agreement (MOA) 15-55 is established for this service). Refer to [Attachment 2](#) for contact points at the 25 OWS. See [Table 1](#) for the responsibilities the USAFA Weather Station has to the 25 OWS.

Table 1. USAFA Responsibilities to 25 OWS.

1	Pre-coordinate wartime, contingency, exercise and other special weather support requirements with the 25 OWS at least 48 hours (7 days preferred) prior to the effective start date for operations.
2	Provide feedback to the 25 OWS on the accuracy, timeliness and relevance of weather services.
3	Provide a current listing of the weather impacts on assigned aircraft and mission execution activities.
4	Notify the 25 OWS in a timely manner when an aircrew encounters phenomena meeting UUA criteria. See AFMAN 15-129, <i>Aerospace Weather Operations -Processes and Procedures</i> for UUA criteria.
5	Coordinate a 24-hour Point Of Contact (POC) for acknowledging receipt of watches and warnings.
6	Notify the 25 OWS, in a timely manner, of any aircraft mishap.
7	Coordinate with the 25 OWS personnel in arranging annual visits as required.

2. Time Hack. The correct time may be obtained from the US Naval Observatory Master Clock, which may be reached at DSN 762-1401 or local commercial (719) 567-6742.

3. Review Procedures. The 34th Operations Group (34 OG) will review this instruction at least annually along with other agencies included, or needed to be included herein. The 34 OG/CC will initiate the annual review and involve the Weather Contractor (34 OSS/OSW) and Quality Assurance Specialist (34 OSS/OSQ) in the review process. Approval authority for the instruction is 34 TRW/CC. 10 CS/SCRIP is responsible for final editing and distribution of the document. Changes to support procedures outlined herein will be negotiated between the contract officer and contractor and implemented as capabilities allow. All supported agencies at the Academy Airfield and USAF Academy Proper will contact the 34 OG Commander (34 OG/CC), as soon as possible, regarding requests for support changes that arise between normal annual reviews. In order for the 34 OG/CC and Management Analysis & Support (10 ABW/

LGCW) to provide or arrange for weather support with the contractor, all units assigned or attached to USAFA must include 34 OG/CC in plans, programs, and operations to ensure complete consideration of weather requirements.

4. Duty Priorities. Academy Weather uses the following priorities to ensure timely response to normal conditions. The duty forecaster and observer may deviate from this priority order for flight safety or to protect people and property ([Table 2.](#)):

Table 2. 34 OSS/OSW Duty Priorities.

1	Accomplish emergency war order (EWO) tasks.
2	Respond to aircraft or ground emergencies (emergency support to supervisor of flying [SOF], Base Readiness, and Base Fire Department are included).
3	Respond to Pilot-to-Metro radio calls.
4	Take and disseminate surface observations locally (see Attachment 1 and Attachment 3).
5	Disseminate weather warnings, watches, and advisories (see Attachment 1 , Attachment 3 , Attachment 4 , and Attachment 5).
6	Perform WSR-88D Weather Radar Watch using the Principle User Position (PUP).
7	Disseminate pilot reports (PIREPS) locally.
8	Transmit surface observations and PIREPS longline.
9	Prepare, issue, and disseminate (locally only) Academy Airfield (KAFF) terminal aerodrome forecasts (TAFs), including amendments and corrections (see Attachment 1 and Attachment 3).
10	Provide flight weather briefings, weather flimsies, staff briefings, and other briefings.
11	Provide other routine duties.

4.1. The 25th Operational Weather Squadron. The 25 OWS is located at Davis-Monthan AFB, AZ, is responsible for resource protection on the Academy when 34 OSS/OSW (Academy Weather) is closed. They will handle request from the Academy in the following order ([Table 3.](#)):

Table 3. 24 OWS Duty Priorities.

1	Perform Emergency War Order Taskings.
2	Respond to Aircraft/Ground Emergencies.
3	Provide Products and Services in Support of Combat, Contingency, and Military Operations Other Than War.
4	Provide Airborne Aircrew Support (Phone Patch).
5	Provide Resource Protection (Forecast Weather Watches, Warnings and Advisories).
6	Disseminate UUA Pilot Reports.
7	Prepare and Disseminate TAFs.
8	Provide Scheduled Flight Weather MEFs and Tactical-level, Non-Contingency MEFs (175-1, Flimsies, etc.).
9	Prepare and Disseminate Peacetime/Exercise Regional and Operational-level Graphics.
10	Prepare and Disseminate Peacetime/Exercise and Operational-level Discussion Products (Regional Bulletins).
11	Prepare and disseminate MOAFs and RCFs.
12	Provide Aerospace Weather Products, Information and Weather Briefings (Climatology, Plain Language Requests).
13	Accomplish Other Routine Weather Support.

5. Base Weather Station (BWS) Operations:

5.1. Observation and Forecast Service and Hours of Operation. Academy Weather provides forecasting and observing services consisting of weather advisories, weather warnings, weather watches, weather briefings, observations, and TAFs. Unless otherwise specified, dissemination of all products will be via the local dissemination systems/telephone. Academy Weather is open and operational, at a minimum, 2 ½ hours prior to first airfield activity (usually, but not always sunrise) until ½ hour after last airfield activity (usually, but not always sunset), Monday through Saturday (including holidays) per contract F05611-00-C-0001. These hours may be adjusted to meet operational requirements (Sunday Operations for example), or for severe weather (**see paragraph 5.6.**) with the prior approval of 34 OG/CC, 34 OSS/OSQ, and 10 ABW/LGCW.

5.2. Weather Supervisor. The Weather Supervisor will be available on-site, 8 hours per day, 5 days per week, excluding holidays, during normal duty hours.

5.3. Contract Manager/Contract Manager Alternate. The Contract Manager or Contract Manager Alternate will be available Monday through Friday during normal business hours within 2 hours of a telephone request from the contract officer to discuss problem areas with Government personnel. If the problem area cannot be resolved telephonically, then the Contract Manager or Contract Manager Alternate will be available for a face-to-face meeting on-site, contingent upon a time mutually agreed to between the Contract Officer and Contract Manager or Alternate.

5.4. Official Observation Site. The observing site is located just west of building 9206. The mountain range to the west restricts visibility to the west to about 5 miles, to the northwest to about 15

miles, and to the southwest to about 30 miles. Buildings to the northeast through southeast of the observation site restrict visibility in those directions.

5.5. Base Weather Station Evacuation. If building 9206 must be evacuated, limited weather forecasting and observing services (due to limited equipment) will shift to building 9212, the control tower. Full weather service will resume in building 9206 when it is determined by the government that occupancy of building 9206 is safe.

5.6. Back-up Support – Hazardous Weather. To ensure weather services are available when hazardous weather potential exists for the protection of personnel and of both air and ground based resources, Base Weather may continue forecasting and observing operations after normal hours, at the discretion of 34 OG/CC. The 34 OG/CC may request the Weather Supervisor, Weather Forecaster, or Weather Observer to fulfill this need until the threat of hazardous weather passes.

6. Weather Equipment:

6.1. Digital Wind Set (FMQ-13). Measures wind speed, direction, wind character, and variability. The official information is recorded in the Base Weather station. Instantaneous readouts of official information are located in the Base Weather station and control tower; and other nonofficial readouts are located at the DZCO and Soaring SOF areas. Sensors for official readouts are located at the touch-down ends of runway 16/34. Runway 26 is not instrumented; therefore, when Runway 26 is the active Runway, wind readings may be estimated at the discretion of the duty observer for the safety of flight. Sensors for unofficial readout locations are located on the roofs of the DZCO and Soaring facilities. USAF/XOW has lost confidence in the accuracy of aging FMQ-13 sensor and has ordered all Air Force Weather stations to estimate wind speed and directions until the sensors can be upgraded at Depot or replaced.

6.2. Radar Storm Detection Unit (WSR-88D). A Doppler radar used to detect precipitation and velocity targets. Depending upon resolution selected, precipitation targets may be detected as far as 240 nautical miles. Velocity targets may be detected as far as 120 nautical miles. The WSR-88D receiver (RDA) and processor (RPG) are located and operated by the National Weather Service (NWS) Forecast Office, Pueblo, CO (50 nautical miles SE of the USAF Academy). The Academy Weather office operates a PUP in building 9206, with PUP presentations being a direct feed from the NWS. Only the duty forecaster or weather supervisor will make PUP display interpretations.

6.3. Cloud Height Set (GMQ-34). Measures the height of cloud bases directly over the sensor up to 12,000 feet above ground level (AGL). The sensor is located at the approach end of runway 34, and the readout indicator is located in the Base Weather station. Due to placement of the sensor, when air-field operations are on runway 16 or 26, ceiling heights may be estimated at the discretion of the duty observer due to safety of flight.

6.4. Temperature/Dew point Set (FMQ-8). Measures the free air temperature and dew point temperature at the centerfield of the runway complex. The indicator readout is located in the Base Weather station, and temperature and dew point are reported in whole degrees Celsius.

6.5. Digital Barometer (DBASI) ML-658. A digital barometer provides pressure readings for altimeter setting and station pressure. Sea-level pressure, pressure altitude, and density altitude readings are derived from the DBASI. An aneroid barometer (ML-102-G) serves as backup for the DBASI. Both pieces of equipment are located in the Base Weather station.

6.6. **Precipitation Measuring Gauge (ML-17).** Holds accumulations of precipitation for measuring and is located about 50 feet west of building 9206.

6.7. **High Wind Alert System (HWAS).** The HWAS is a series of 12 sensors located at various locations on the Air Force Academy Proper, the Academy Airfield, and locations immediately off base. The HWAS system reports Wind Speed, Wind Direction, Wind Gust, Air Temperature, Relative Humidity, and Barometric Pressure for the sensor location (4 sensors also report precipitation). The HWAS aids in forecasting gusty wind, low-level turbulence, inversion break time, and the potential for icing.

6.8. **Acoustic Sounder (SODAR).** The SODAR is a device that measures wind speed, direction, and wind gust in a vertical profile from the surface to between 6,000 and 9,000 feet AGL in the vicinity of the Academy Airfield. Data is available in a continuous mode.

6.9. **Precision Lightning Warning System (PLWS).** A lightning detection system is installed that aids forecasters and observers in locating cloud-to-ground lightning strikes at the Air Force Academy Proper, Academy Airfield, Jack's Valley, and Farish Recreational area. It is important to remember the PLWS detects cloud-to-ground lightning strikes only. Other types of lightning may be observed, and lightning watches and warnings may be issued when there are no apparent cloud-to-ground lightning strikes detected on the PLWS.

6.10. **Electrical Storm Identification Device (ESID).** The ESID is another method of detecting lightning flashes (in-cloud, cloud-to-cloud, cloud-to-air, or cloud-to-ground) and electronic discharges in the vicinity of device. An ESID is installed on the roof of building 9206. Other types of lightning may be observed, and lightning watches and warnings may be issued when there are no apparent flashes or electronic discharges detected on the ESID.

6.11. **Runway Visual Range Equipment.** There is no Runway Visual Range Equipment installed at the USAF Academy.

6.12. **Alternate Observing Site Kit.** A portable kit containing hand-held weather equipment, which allows the observer to take limited observations from a remote site, should the Base Weather station be evacuated.

7. Weather Equipment Maintenance. The government and the weather station contractor each have specific requirements for equipment maintenance in accordance with weather contract F05611-00-C0001 (Section C4). The weather contractor will generally arrange for the required maintenance (and in some cases, spare parts) on equipment for which they are responsible, through contracts with specific maintenance providers.

7.1. **Contractor Provided Weather Equipment Maintenance.** The weather station contractor is required to provide maintenance on the following equipment:

7.1.1. PLWS and ESID – Lightning Detection Systems.

7.1.2. High Wind Alert System.

7.1.3. SODAR.

7.1.4. Alternate Observing Site Kit Equipment.

7.2. **Government Provided Weather Equipment Maintenance.** The government will maintain all other government furnished weather equipment (GFE). The 10th Communications Squadron (10 CS)

arranges for and, in some cases, provides maintenance for government maintained weather equipment. 21 CS (Peterson AFB), through arrangements with 10 CS, provides maintenance for weather sensing equipment. The weather contractor is responsible for initiating maintenance and repairs of the GFE weather equipment.

7.3. Maintenance Restoral System. In accordance with the support agreement between 10 CS and 21 CS, with the advice and consent of 34 OG/CC, 21 CS maintenance uses a restoral system for equipment for which the government is responsible according to the following codes:

7.3.1. Priority 1 – Immediate.

7.3.2. Priority 2 - Within 24 hours or the next duty day.

7.3.3. Priority 3 - Next scheduled trip to that facility.

7.3.4. Restoral Priority for Outages - 21 CS maintains the following GFE equipment and restores to operation in the following order:

<u>Equipment</u>	<u>Restoral Code</u>
NTFS (New Tactical Forecast System/DoD Weapon System)	1
WSR-88D PUP (USAF)	1
PMSV	1
ASOS (Automated Surface Observing System at Bullseye Airfield)	2
FMQ-13 at Base Weather and the tower (USAF)	2
ML-658/GM DBASI altimeter (USAF)	2
GMQ-34 ceilometer (USAF)	2
FMQ-8 temperature/dew point (USAF)	2
ML-102 aneroid barometer (USAF)	2
FMQ-13 at 94th FTS (USAF)	2
FMQ-13 at 98th FTS (USAF)	2
FMQ-13 at Bullseye Airfield	3
ML-17 rain gauge (USAF)	3

8. Communications:

8.1. Pilot-to-Metro Service (PMSV). Base Weather has a two-way UHF (376.00) and VHF (121.95) radio operated by the duty forecaster or duty observer. The PMSV will be monitored and answered during regular airfield operational hours. Weather information will be made available to airborne aircraft within range of the PMSV transceiver. Each aircrew, time permitting, will relay a report of present position, altitude, quality of reception, and weather en route or at their location. Aircraft that are not airborne, requesting information via the PMSV, receive the same priority as requests outlined in paragraph 4.10. Observers are trained to answer calls on the PMSV. They will identify themselves as observers. Pilots should understand that observers may read forecasts written by a certified fore-

caster, but observers may not make or interpret forecasts. Observers may also provide, via PMSV, current surface observations and current WSR-88D radar PUP observations to pilots.

8.2. New Tactical Forecast System (NTFS)/Advanced Meteorological Information System (AMIS). A US Air Force weather distribution network sending and receiving worldwide weather data to the forecasters and observers. The local portion of the NTFS/AMIS network is the primary method of passing pertinent weather information (local observations, forecasts, warnings, advisories, and watches) to the interested users at the Academy Airfield and Proper. Local users with NTFS terminals must report outages to Base Weather who will notify the appropriate maintenance provider. While a local NTFS/AMIS user's terminal is logged out, Base Weather will pass weather information to the user telephonically, when requested. Examples of NTFS/AMIS weather information formats are listed in [Attachment 3](#). Observations and PIREPs are transmitted longline via the NTFS/AMIS network to interested offbase users at the Air Force level and for use by the Federal Aviation Administration (FAA) and National Weather Service (NWS).

8.3. Further Dissemination of Warnings, Watches, and Advisories:

8.3.1. During Academy Weather Operational Hours. After warnings, watches, and advisories are disseminated over the NTFS/AMIS network, Base Operations personnel activate the Automated Network System, commonly called HAL. HAL is a computerized telephone notification system that further disseminates warnings, watches, and advisories when activated by Base Operations to the Academy populous locations without NTFS/AMIS receivers (see [Attachment 4](#), [Attachment 8](#), and [Attachment 9](#)).

8.3.2. After Academy Weather Operational Hours. When Academy Weather is closed, Davis-Monthan AFB, AZ (25 OWS), who has Warning and Watch notification responsibility when Academy Weather is closed, will contact the Air Force Academy Security Forces Squadron (10 SFS) desk sergeant with warnings and watches for the Academy. 10 SFS desk sergeant will then notify organizations with requirements for warning and watch notification (see [Attachment 5](#) and [Attachment 8](#)).

9. Observing Services. Academy Base Weather observers perform a variety of services using the Basic Weather Watch concept (see [Attachment 1](#)) including: weather observations, observed weather warnings for lightning within 5-miles of the Academy Airfield Complex, forecaster support, and additional duties to facilitate operation of the weather station. Additionally, observers are trained to use the WSR-88D radar to interpret returns but not to forecast storm movement, forecast hazardous weather, or forecast lightning potential.

9.1. Surface Weather Observations. The certified weather observer takes records and disseminates a METAR (SA) weather observation (see [Attachment 6](#)) once each hour, on the hour. When changes to the current weather are detected, the observer will evaluate the need to take a SPECI (SP) or LOCAL (L) weather observation. The process of taking a weather observation may include a physical check of observable weather conditions, reading and recording of instrumentation, or both. The data will be encoded in METAR code for local and longline dissemination, as required. The criteria for SPECI and LOCAL observations are listed in [Attachment 3](#). Observers will frequently recheck weather conditions at intervals not to exceed 20 minutes to determine the need for SPECI or LOCAL observations when any of the following conditions are occurring or are forecast to occur within the next 2 hours:

Ceiling of 3,000 feet AGL or less

Visibility of 3 miles or less

Precipitation (any type)

Fog

Lightning

Thunderstorms, Severe Thunderstorms, or TORNADO

9.2. **Runway Surface Condition (RSC).** Airfield Management personnel determine the RSC during airfield operational hours as outlined in AFI 13-213, *Airfield Management*. Airfield Management personnel, as other duties permit, then provide RSC data to the weather observer. The observer disseminates the RSC locally and longline via the NTFS/AMIS. When RSC report is not available, the observer will append RCRNR (Runway Condition Report Not Reported) on hourly weather observations.

10. Forecast Services. Academy Weather forecasters provide a wide range of weather services for flying and non-flying customers at the USAF Academy. Forecasters perform Met-Watch of the Academy Airfield Complex and Academy Proper issuing weather advisories, weather warnings and watches, Terminal Aerodrome Forecasts (TAFs), pilot briefings, and other routine duties:

10.1. **Terminal Aerodrome Forecast (TAF).** A 24-hour forecast issued 1 hour before the start of airfield operations, plus each 6 hours thereafter, until airfield closing. The area covered by the TAF (see [Attachment 1](#) and [Attachment 7](#)) is a radius of 5 statute miles (8000 meters) from the center-point of the Academy Runway Complex. The use of the term “vicinity” (abbreviated “VC” in the text of the forecast) refers to an area between 5 statute mile and 10 statute-mile radiuses from the center-point of the Academy Runway Complex. The full 24 hours of the TAF are disseminated locally only over the NTFS/AMIS system. If the NTFS/AMIS system is down during scheduled TAF transmission time (including amendments and corrections), the forecaster will disseminate the TAF via telephone hotline to the Tower, DZCO, Soaring, and hand-carry a copy of the TAF to Base Operations. As soon as the NTFS/AMIS system service has been restored, the forecaster will transmit the TAF over the NTFS/AMIS system.

10.2. **Pilot Reports (PIREP).** SOFs, DZCOs, Air Traffic Control (ATC), Squadron Operations Officers, Academy Aircrews, and Aero Club Aircrews will relay PIREPs to Base Weather in a timely manner when they are in receipt of PIREP information. PIREPs are a valuable source of information for weather forecasters and flight crews. PIREPs may be used to confirm the existence of forecast conditions or identify previously un-forecast conditions. All PIREPs containing severe or extreme turbulence, any icing, low-level wind sheer or wind sheer conditions (WSCONDS), TORNADOS, Severe Thunderstorms, or Hail; and PIREPs containing significant non -forecast weather will be disseminated locally and longline via NTFS/AMIS.

10.3. **Briefing Services.** Cross-country and flight weather briefings (documented on DD Form 175-1, **Flight Weather Briefing, or TAC/AV worksheet**) are available in person or by telephone; however, in-person briefings are best and are encouraged. Academy Weather will provide verbal flight weather briefings and document them on **Maytag Aircrew Briefing Log**. During forecast service hours, there is generally only one forecaster on duty. The forecaster may be augmented as necessary during extremely heavy workload periods and whenever hazardous weather threatens the base. During peri-

ods of inclement or hazardous weather, there may be briefing delays and unavoidable inconvenience due to the number of activities the forecaster is tasked to perform (see [Attachment 1](#)). Observed weather advisories and weather watches will not be included in the text of written briefings since ATC must pass all significant weather to aircrews upon take-off and landing (in accordance with FAA Handbook 7110.65).

10.4. Toxic Corridor Forecasts. Base Readiness has responsibility for toxic corridor notification (see [Attachment 1](#)). As a back up, when Base Weather is notified by Base Readiness or the on-scene commander of a toxic substance spill, Base Weather personnel may be asked to calculate a toxic corridor using the worse case scenario winds from the corridor length program. Weather will pass the calculated information to readiness or the on-scene commander.

10.5. Terminal Forecasts for Alternate Airfields. Academy Weather provides daily 24-hour terminal forecasts for alternate airfields the Academy flying squadrons' use. Alternate airfields include Colorado Springs Airport/Peterson AFB (KCOS), Buckley ANGB (KBKF), Centennial Airport (KAPA), and Pueblo Airport (KPUB); but it may include others as needed or requested.

10.6. Trip Forecasts for Superintendent. Academy Weather will accomplish a trip forecast for the USAFA Superintendent upon request. Trip forecasts will include general forecasts for the local area and destination areas.

11. General Weather Support Services. In addition to specific forecasting and observing services, which are performed on a regular and frequent basis, the following functions and services may also be provided as part of the 34 OSS/OSW mission:

11.1. Off-Site Weather Briefings. The Academy Weather Supervisor or designate will provide the following briefings when requested:

- 11.1.1. Wing staff meetings.
- 11.1.2. Operational stand-up briefings.
- 11.1.3. Exercise/Real-world (Crisis Action Team), or deployment briefings.
- 11.1.4. Instrument refresher/seasonal weather briefings (SOF CT Meetings).
- 11.1.5. Any meeting requiring weather support.

NOTE: Requests made for any of the briefings listed above should include sufficient lead-time for scheduling and presentation by Base Weather personnel. Briefings must be considered for planning purposes only and should not be used in lieu of actual flight weather briefings.

11.2. Climatological Support. Academy Weather will provide limited climatological data for USAFA. Special studies or data for other areas can be provided with sufficient notification of briefing time. Climatological database is limited because the weather office is not open 24 hours per day.

11.3. Release of Weather Records. Weather records are available to any base agency, which makes a request for official use. Requests for release of weather records received from other organizations (i.e., contractors doing work on base or other offbase interests) will be considered for release by 34 OG/CC and 10 ABW/LGCW on a case-by-case basis, with guidance provided by the base Public Affairs Office (HQ USAFA/PA).

11.4. Emergency or Special Event Support. Emergency or Special Event Support consists of forecast and observation services provided outside normal contractual hours of operation. This support may be provided upon request from a base customer through 34 OG/CC or without prior request when necessitated by hazardous weather conditions to protect personnel, air and ground based resources.

11.5. Support for Snow Removal. Base Weather will provide weather information prior to and during snowfall events to Horizontal Elements (10 CES/CEOSP). This information may include total snowfall accumulation expected and duration of snowfall events. Base Weather will also provide, when requested, climatological briefings in support of pre- and post-season Snow and Ice Control Meetings and training to snow removal personnel on proper snow measuring procedures.

12. Weather Advisories/Weather Warnings/Weather Watches. Weather station personnel (at Academy Weather during normal operational hours, at 25 OWS when Academy Weather is closed) issue Weather Advisories (25 OWS only issues warnings and watches), Weather Warnings, and Weather Watches (see Attachment1) for USAFA customer specified criteria within USAFA customer requested desired lead-times (see paragraph 12.2.), as required, for the protection of personnel and government resources on the Academy Airfield and Academy Proper. Due to the numerous customer specified thresholds and lead-time requirements, some consolidation is necessary to provide a practical and functional program for the benefit of all supported organizations. All warnings, watches, and advisories will be issued for the Academy Airfield or Academy Proper, and the text of the product will clearly define the area coverage.

12.1. Numbering System. Weather advisories, warnings, and watches will be numbered according to the number of the month in which they are issued and the sequential number of the product. For example, the first warning issued in the month of March would be designated Weather Warning 03-001. An example of the seventy-seventh advisory issued during December would be designated 12-077.

12.2. Lead-Times. Desired lead-time (DLT) is the amount of advance notice which supported customers need to react. Each agency requiring Weather Warning or Weather Advisory support will provide input regarding the amount of time it requires them to prepare for the hazardous weather event forecast. Using customer input, Base Weather will derive desired lead-times for each hazardous weather criterion.

12.3. Valid Times. Weather warnings, weather watches, and forecast weather advisories will remain in effect for the time specified in the warning or watch text. Observed weather advisories and observed weather warning for lightning will remain in effect for as long as the lightning conditions are observed.

12.4. Extensions. Forecast weather advisories, warnings, and watches may be extended without issuing a completely new product, providing the text of the original product does not change and the original product has not expired.

12.5. Amendments, Corrections (AMDs and CORs), Cancellations, and Expirations to Warning, Watches and Advisories:

12.5.1. Amendments. Amendments may be issued to upgrade, downgrade, add or delete criteria, or change values within the warning, advisory, or watch. When an amendment is issued, the amended product will have a new number, and the reason for the amendment will be clarified in the text of the product.

12.5.2. Corrections. Corrections may be issued to correct simple typographical errors within the transmitted product. There will be no change to any criteria in the product, and the reason for the correction will be clarified within the text of the corrected product.

12.5.3. Cancellations and Expirations. Forecast warnings, advisories, and watches will remain in effect until cancelled or until the valid time expires. Products will be cancelled or allowed to expire when the forecast condition is no longer expected to occur.

12.6. Agency Protective Measures:

12.6.1. Weather Warnings. When a weather warning is issued for a TORNADO or Severe Thunderstorm, personnel should immediately take cover. For all other warnings, action will be taken, as directed by the Superintendent (HQ USAFA/CC) or other appropriate authority, to protect personnel and government resources.

12.6.2. Weather Watches. When a weather watch is issued, action will be taken, as directed by the HQ USAFA/CC or other appropriate authority, to prepare personnel to take action and to protect government resources should hazardous weather actually develop.

12.7. **Lead-time/False Alarm Policy.** The USAFA/CC is responsible for the safety of cadets and all assets at the Air Force Academy, which, if left unprotected during hazardous weather could result in serious injury or damage. Although the HQ USAFA/CC desires accurate and timely warning and advisory service as possible, the primary objective of the Warning, Watch, and Advisory Program is to minimize injury to personnel and damage to government resources. Consequently, the HQ USAFA/CC's policy, as implemented by Base Weather, is if the duty forecaster assesses there is reasonable probability Weather Warning criteria will occur, the forecaster will issue the weather warning with the desired lead-time, or issue a weather watch, to put base personnel on notice that hazardous weather may occur during the weather watch period. Although this may result in a higher number of "false alarms," this minimizes the likelihood of destructive weather occurring without ample warning.

12.8. **Types of Warnings.** All warnings (see [Attachment 1](#), [Attachment 3](#), [Attachment 4](#), and [Attachment 5](#)) for the Academy Airfield (see [Attachment 1](#)) or Academy Proper (see [Attachment 1](#)) are issued when warning criteria is occurring, or forecast to occur, within 5 miles of the base. When the airfield is open, and there is a forecaster on duty, all warning criteria will be reflected in the TAF. The maximum forecast wind speed for wind warning criterion will be included in the text of each warning. Warnings will be issued for the Academy Airfield only when the airfield is open.

12.8.1. TORNADO Warning. A TORNADO warning is issued if a TORNADO or Funnel Cloud observed visually or on WSD-88D Doppler Radar. Upon issuance of a TORNADO warning, the 10 SFS desk sergeant is contacted by the Academy duty forecaster or 25 OWS (when Academy Weather is closed) at DSN 333-2000 and is directed to activate the base TORNADO siren. If the 10 SFS cannot be contacted, (communications out for example) the Training Wing Operations Center (TWOC) will be contacted (telephone DSN 333-2910) and the TORNADO siren be activated from that location. A TORNADO warning will normally be valid no longer than 1 hour, but it may be extended at the discretion of the forecaster or Severe Weather Analysis Team (SWAT).

12.8.2. Severe Thunderstorm Warning. A severe thunderstorm is a thunderstorm with wind sustained or wind gusts greater than or equal to 50 knots and/or hail $\frac{3}{4}$ inch, or greater, in diameter. Severe thunderstorm warnings will normally be valid no longer than 2 hours, but it may be extended at the discretion of the forecaster or SWAT.

12.8.3. Moderate Thunderstorm Warning. A moderate thunderstorm has sustained wind, or wind gusts 35 to 49 knots, and/or hail $\frac{1}{2}$ inch to less than $\frac{3}{4}$ inch in diameter. A moderate thunderstorm warning will normally be valid no longer than 2 hours, it but may be extended at the discretion of the forecaster or SWAT.

12.8.4. Hail Warning. A hail warning is issued when hail $\frac{1}{4}$ inch in diameter to less than $\frac{3}{4}$ inch in diameter is forecast to occur. A hail warning will normally be valid no longer than 2 hours, but it may be extended at the discretion of the forecaster or SWAT.

12.8.5. Observed Lightning Within 5 Miles. An observed lightning warning will be issued whenever lightning is observed within 5 miles of the Academy Airfield, Cadet Area, Jacks Valley, and Farish Recreational Area. The observed lightning warning will be valid as long as the condition persists and will not have an end time appended. Observed Lightning Within 5 Miles Warnings will be valid until further notice. (UFN). 25 OWS will issue observed lightning warnings within 15 miles of the USAFA Proper when the weather station is closed. *NOTE:* The forecaster will also make an announcement on the trunk radio for lightning within 5 miles of the Airfield.

12.8.6. High Wind Warning (not associated with thunderstorms). A high wind warning is issued when wind, either sustained or gusts, of 50 knots or higher, is forecast at the Academy Airfield or Academy Proper.

12.8.7. Wind Warning (not associated With Thunderstorms). A wind warning is issued when wind, either sustained or gusts, between 35 and 49 knots, is forecast at the Academy Airfield or Academy Proper.

12.8.8. Freezing Precipitation Warning. A freezing precipitation warning will be issued when freezing rain or freezing drizzle is forecast for the Academy Airfield or Academy Proper.

12.8.9. Heavy Snow Warning. A heavy snow warning is issued when snow accumulation of 2 inches or more is forecast at the Academy Airfield or Academy Proper within a 12-hour period.

12.8.10. Blizzard Warning. A Blizzard Warning is issued when blizzard conditions are forecast. Blizzard conditions are defined as wind, sustained at 30 knots or greater, combined with considerable falling or blowing snow, causing a prevailing visibility of $\frac{1}{2}$ mile or less.

12.8.11. Warning Criteria and Desired Lead Time (DLT) Requirements:

Table 4. 34 OSS/OSW Warning Criteria (During duty hours).

#	Criteria	DLT
1.	Tornado.	10 minutes
2.	Winds $\geq 35 < 50$ knots.	60 minutes
3.	Winds ≥ 50 knots.	60 minutes
4.	Severe Thunderstorms (Winds ≥ 50 Knots and/or Hail $\geq 3/4''$).	60 minutes
5.	Moderate Thunderstorms (Winds ≥ 35 Knots ≤ 50 Knots and/or Hail $\geq 1/2'' \leq 3/4''$).	60 minutes
6.	Heavy snow ($\geq 2''$ in 12 hours).	120 minutes
7.	Freezing Precipitation.	120 minutes
8.	Blizzard Conditions.	120 minutes

Table 5. 34 OSS/OSW Observed Warning Criteria (During duty hours).

#	Criteria
1	Lightning Within a 5 NM Radius of airfield, cadet area, Jacks Valley, and Farish Recreational area.

Table 6. 25 OWS Weather Warning Criteria (After duty hours).

#	Criteria	DLT
1.	Tornado.	30 minutes
2.	Winds $\geq 35 < 50$ knots.	60 minutes
2.	Winds ≥ 50 knots.	60 minutes
3.	Severe Thunderstorms (Winds ≥ 50 Knots and/or Hail $\geq 3/4''$).	60 minutes
4.	Moderate Thunderstorms (Winds ≥ 35 Knots ≤ 50 Knots and/or Hail $\geq 1/4'' \leq 3/4''$).	60 minutes
5.	Heavy rain ($\geq 2''$ in 12 hours).	90 minutes
6.	Heavy snow ($\geq 2''$ in 12 hours).	90 minutes
7.	Freezing Precipitation.	90 minutes
8.	Blizzard Conditions.	240 minutes

Table 7. 25 OWS Observed Warning Criteria (After duty hours).

#	Criteria
1	Lightning Within a 15 NM Radius of airfield.

12.9. **Types of Advisories.** There are two types of weather advisories (see [Attachment 1](#), [Attachment 3](#), [Attachment 4](#), and [Attachment 5](#)) issued by Base Weather, forecast weather advisories and observed weather advisories:

12.9.1. Forecast Weather Advisories. When the airfield is open, and there is a forecaster on duty, all forecast advisory criteria will be reflected in the TAF. The maximum forecast wind speed for wind advisory criterion will be included in the text of each forecast advisory. All forecast advisories are only issued when the Academy Airfield is open.

12.9.1.1. Surface Wind Advisory. A surface wind advisory is issued when wind, either sustained or gusts, of 25 to 34 knots, is forecast at the Academy Airfield.

12.9.1.2. Turbulence Advisory. A turbulence advisory is issued when moderate or greater turbulence, as defined for small, type 1 aircraft, is forecast for the Academy Airfield, at or below 15,000 ft MSL.

12.9.1.3. Icing Advisory. An icing advisory is issued when icing of any type or intensity is forecast for the Academy Airfield, at or below 15,000 ft MSL.

12.9.1.4. Forecast Weather Advisory Desired Lead-Time (DLT) Requirements:

Table 8. 34 OSS/OSW Forecast Weather Advisory Criteria (When airfield is open).

#	Criteria	DLT
1.	Surface Wind Advisory (25-34 knots).	30 minutes
2.	Turbulence--moderate or greater.	60 minutes
3.	Icing--any intensity.	60 minutes

12.9.2. Observed Weather Advisories. Observed weather advisories are issued when the phenomena first occurs, and as such, have no "Desired Lead-time" requirement. Observed Weather Advisories will remain in effect as long as the phenomena are occurring. The observed advisory text will have no end time but rather an end time of UFN "Until Further Notice." All observed advisories are only issued when the Academy Airfield is open.

12.9.2.1. Wind Shear Conditions (WSCONDS). When wind shear conditions are observed in the vicinity of the Academy Airfield, a WSCONDS advisory will be issued. Wind Shear Conditions are generally reported to Base Weather by aircraft in the vicinity of the airfield (by PIREPs or through the SOF), may be evident through SODAR upper air wind readings, or through the WSR-88D.

12.9.2.2. Surface Wind Speed Greater Than or Equal to 19 Knots. Issued when wind speed, either sustained or gusts, reach 19 knots on either runway sensor. This advisory is only issued when the 98th Flying Training Squadron (98 FTS) (Para) is flying. This observed advisory will be re-evaluated every 10 minutes as long as the phenomena are occurring.

12.9.2.3. Surface Wind Speed Greater Than or Equal to 25 Knots. Issued when wind speed, either sustained or gusts, reach 25 knots on either runway sensor. This observed advisory will be re-evaluated every 15 minutes as long as the phenomena are occurring.

12.9.2.4. Surface Wind Speed Greater Than or Equal to 35 Knots. Issued when wind speed, either sustained or gusts, reach 35 knots on either runway sensor. This observed advisory will be re-evaluated every 15 minutes as long as the phenomena are occurring.

12.9.2.5. Crosswind (x-wnd) Component Exceeds 15 Knots (16-24 Knots) on Either Runway Sensor. This observed advisory will be re-evaluated every 15 minutes as long as the phenom-

ena are occurring.

12.9.2.6. Crosswind (x-wnd) Component Exceeds 24 Knots (25 Knots or Greater) on Either Runway Sensor. This observed advisory will be re-evaluated every 15 minutes as long as the phenomena are occurring.

12.9.2.7. Appearance of Rotor Clouds. Will remain in effect as long as rotor clouds are observed.

12.9.2.8. Observed Lightning Within 10 Miles of the Academy Airfield. *NOTE:* The observer will also make an announcement on the trunk radio for lightning within 10 miles of the Airfield.

12.9.2.9. Density Altitude observed of greater than or equal to 9,500 feet.

12.9.2.10. Density Altitude observed of greater than or equal to 10,000 feet.

12.9.2.11. Wind chill temperature of less than or equal to 0 F.

12.9.2.12. Wind chill temperature of less than or equal to -20 F.

12.10. **Types of Weather Watches.** When a Weather Watch (see [Attachment 1](#), [Attachment 3](#), [Attachment 4](#), and [Attachment 5](#)) is issued, meteorological conditions are such that the potential exists during the timeframe of the watch for rapid development of hazardous weather (see [Attachment 1](#)). Personnel should be ready to react immediately should a weather warning be issued. A Watch NEVER takes the place of a Warning. A lightning watch will be issued 30 minutes before first lightning occurrence is expected. The remaining watches will be issued at the discretion of the duty forecaster, the SWAT, or 25 OWS (when Base Weather is closed).

12.10.1. TORNADO Watch.

12.10.2. Severe Thunderstorm Watch.

12.10.3. Lightning Watch within 15 miles of the Academy.

12.10.4. Heavy Snow Watch.

12.10.5. Freezing Precipitation Watch.

12.10.6. High Wind Watch (Wind sustained or gusts greater than or equal to 50 knots).

Table 9. 34 OSS/OSW Weather Watch Criteria (During duty hours).

#	Criteria	
1	TORNADO.	As potential warrants
2	Severe Thunderstorm Watch.	As potential warrants (Optimum: 4 hours prior to occurrence)
3	Lightning Watch within 15 miles of the Academy.	30 minutes
4	Heavy Snow Watch.	As potential warrants
5	Freezing Precipitation Watch.	As potential warrants
6	High Wind Watch (Wind sustained or gusts greater than or equal to 50 knots).	As potential warrants (Optimum: 4 hours prior to occurrence)

Table 10. 25 OSW Weather Watch Criteria (After duty hours).

#	Criteria	
1	Potential of Lightning Within a 15 NM Radius of airfield.	60 minutes

13. Reciprocal Support. Mutual support and cooperation are key elements in Base Weather's ability to provide complete and timely weather service to all base customers. Responsibilities of various base agencies are addressed as follows:

13.1. All Agencies:

13.1.1. All agencies will provide feedback, as necessary, regarding operations and service provided by Base Weather to 34 OG/CC or 34 OSS/OSQ. Upon receipt of feedback, 34 OG/CC or 34 OSS/OSQ will forward feedback reports to 10 ABW/LGCW with an info copy of the feedback report provided to the Weather Station Supervisor.

13.1.2. All agencies must provide written notification of any changes that are weather support requirements to 34 OG/CC. After review of requirement changes, 34 OG/CC will forward requests for change of requirements to 10 ABW/LGCW for processing in accordance with the weather contract.

13.1.3. All agencies with remote NTFS/AMIS terminals will monitor weather conditions at the Air Force Academy. In addition, all agencies will establish internal pyramid alerting procedures for processing and notification when weather warnings, advisories, and watches are received via NTFS/AMIS, via the HAL telephone notification network, or from 10 SFS.

13.2. 34th Operations Group Commander:

13.2.1. Exercises operational, financial, and administrative oversight of Base Weather. Since weather service is a contract function, 34 OG/CC will act as the focal point for all base agencies in matters relating to weather support. 34 OG/CC will coordinate with 10 ABW/LGCW and 34 OSS/OSQ should weather support requirements change.

13.2.2. Monitor day-to-day operations of the Base Weather station, and coordinate with 10 ABW/LGCW and the 34 OSS/OSQ to resolve any problems that may develop in weather station operational performance.

13.3. Directors of Operations of Flying Squadrons and 34 OSS/DO:

13.3.1. Notify 34 OG/CC of changes in weather support requirements.

13.3.2. Ensure SOFs/DZCOs pass pilot weather reports to Base Weather.

13.3.3. Ensure SOFs/DZCOs receive a thorough weather briefing as often as required to ensure safety of flying. This includes ensuring the SOFs/DZCOs pick-up the weather flimsy after the TAF has been transmitted.

13.3.4. The 98 FTS/DZCOs notifies weather when parachuting operations has temporarily suspended, competed, or cancelled for the day.

13.3.5. The Director of Operations, 94th Flying Training Squadron (94 FTS/DO), or SOF notifies weather when flying is cancelled or completed for the day.

13.3.6. The Aero-Club Supervisor of Flying for IFT operations notifies weather when flying is cancelled or completed for the day.

13.4. 25 OWS. OWS will provide weather resource protection, in accordance with MOA 15-55, to the USAFA during the hours that Academy Weather is closed.

13.4.1. 25 OWS Responsibilities. The 25 OWS will:

Table 11. 25 OWS Responsibilities.

1	Function as the CWT for the supported unit as resources and capabilities permit.
2	Develop and maintain a Unit Tailored Page (UTP) on the 25 OWS Weather Information Home Page.
3	Develop and maintain standard classified dissemination systems.
4	Provide products and services in accordance with Table 3 .
5	Disseminate Watches, Warnings and Point Weather Warnings (PWW) in accordance with Attachment 3 .
6	Develop and coordinate backup weather operations procedures and instructions with the USAFA for OWS outages lasting up to 72 hours.
7	Respond to requests for assistance when notified of in-flight emergencies, aircraft or ground mishaps and perform necessary data saves.
8	Maintain links on the 25 OWS Home Page to the JAAWIN space products to include space weather forecasts and space weather alerts and warnings.
9	Use available alternate communications when primary systems are down.
10	Document verbal flight weather briefings using the 25 OWS Verbal Flight Briefing Log.
11	Work with the USAFA to establish a relevant quality assurance program.
12	Provide monthly formal performance report NLT the 20th of the following month.
13	Respond to feedback from aircrews.
14	Provide services for deployed operations.
15	Provide Metwatch support for the USAFA when the contract weather personnel are not on duty, become incapacitated, or whenever the must evacuate.
16	Recall standby forecaster to assume Metwatch responsibilities in the event of tornado, convective wind gust > 35 kts or hail $\geq 1/4$ inch. Notification will be based on receipt of a PWW for CO4.

13.4.2. 25 OWS Products.

Table 12. Unit Tailored Page Products Provided by 25 OWS.

1	Current Upper Air Data (plotted and raw) via the 25 OWS Home Page.
2	Local and Regional Weather Conditions and Forecasts.
3	Weather Warnings, Watches and Advisories.
4	Take Off/Landing Data for USAF Academy.
5	Target/Route Planning Information.
6	Local Solar/Lunar Data, Temperature and Pressure Altitude Forecasts.
7	Flight Level Winds and Temperature Information.
8	Regional Weather and Hazards Charts.
9	Regional Weather Satellite Images.
10	Regional Weather Doppler Radar and Lightning Data.
11	Regional Meteograms.
12	PIREPs, SIGMETs, AIRMETs.
13	Alert Package Charts.
14	Instrument Refresher Course Briefings for Pertinent Regions.

13.5. Airfield Management/Base Operations:

13.5.1. Ensures weather warnings, watches, and advisories are further disseminated promptly via telephone or the Automated Network System, commonly called “HAL.”

13.5.2. Notifies Base Weather of active runway changes and runway surface conditions.

13.5.3. Notifies Base Weather of aircraft emergencies and mishaps via secondary crash net.

13.5.4. Publishes pertinent weather information in the *Flight Information Publications* (FLIP).

13.5.5. Ensures Base Weather is notified as flying squadrons (94 FTS, 98 FTS, 557 FTS and other operational aircraft) complete, suspend, or cancel flying for the day.

13.5.6. Notifies Base Weather when the Academy Airfield opens and closes.

13.6. Control Tower:

13.6.1. Solicits PIREPs, as appropriate, especially from within the Academy Airfield traffic pattern, and promptly relays them to Base Weather.

13.6.2. Conducts a cooperative weather watch with Base Weather and advises Base Weather of the following conditions:

13.6.2.1. Increasing, decreasing, or varying visibility, and of the tower’s prevailing visibility when either the tower’s or weather’s prevailing visibility is 4 miles or less.

13.6.2.2. Obstructions to vision not previously reported.

13.6.2.3. Precipitation begins or ends.

13.6.2.4. A thunderstorm is heard, or a TORNADO, Funnel Cloud, or Lightning is observed.

- 13.6.2.5. The forming, raising, lowering, or a sudden absence of a ceiling or low cloud layer.
- 13.6.2.6. Any condition, which in the opinion of the controller, may affect the safety of flight.
- 13.6.3. Performs a daily radio check with Base Weather as time and other duties permit.
- 13.6.4. Ensures new weather personnel receives a tower orientation.
- 13.6.5. Will allow space in the control tower (building 9212, first floor) as an alternate observing and forecasting site, should the weather station be evacuated.
- 13.6.6. Ensures controllers receive required weather training within 60 days of arrival on station.
- 13.7. **10 CES/CEOSP Snow Control.** Snow control will report snow depth measurements taken at the community center and the cadet area, to Base Weather, as time and other duties permit.

14. Form Adopted. DD Form 175-1, **Flight Weather Briefing.**

S. TACO GILBERT III, Brig Gen, USAF
Commandant of Cadets

Attachment 1**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****Abbreviations and Acronyms***

AMIS—Automated Meteorological Information System

AFWA—Air Force Weather Agency

AGL—Above Ground Level

AMD—Amendments

ATC—Air Traffic Control

CB—Cumulonimbus Clouds

CWT—Combat Weather Team

BWS—Base Weather Station

COR—Corrections

DBASI—Digital Barometer

DLT—Desired Lead-Time

DZCO—Drop Zone Control Officer

ESID—Electrical Storm Identification Device

EWO—Emergency War Order

FAA—Federal Aviation Administration

FLIP—Flight Information Publication

GFE—Government Furnished Weather Equipment

HWAS—High Wind Alert System

KAFF—Academy Airfield

NTFS—New Tactical Forecast System

NWS—National Weather Service

OSW—Weather Flight

OWS—Operational Weather Squadron

PIREPS—Pilot Reports

PLWS—Precision Lightning Warning System

PMSV—Pilot-to-Metro Service

PUP—Principle User Position

RDA—Receiver

RPG—Processor

RSC—Runway Surface Condition

SODAR—Acoustic Sounder

SOF—Supervisor of Flying

SWAT—Severe Weather Analysis Team

TAF—Terminal Aerodrome Forecasts

WA—Weather Advisory

WSCONDS—Wind Shear Conditions

WW—Weather Warning

Terms

Academy Airfield Terminal Aerodrome Complex—The area within a 5 statute-mile (8,000 meter) radius of the center-point of the USAF Academy 16/34 runway.

Academy Proper—All other areas and property of the USAF Academy with the exception of the Academy Airfield Terminal Aerodrome Complex.

Airman's Meteorological Information Advisory (AIRMET)—A National Weather Service (NWS) in-flight advisory of weather that may be hazardous, other than convective activity, to single engine aircraft, other light aircraft, and Visual Flight Rule (VFR) pilots.

Base Weather Station (BWS)—The function operated under government contract F05611-00-C-0001, for the United States Air Force Academy, by Weather Data Services, A Division of Maytag Aircraft Corporation, Colorado Springs, CO.

Basic Weather Watch (BWW)—A BWW is conducted from the Base Weather station by a certified weather observer who, because of other duties, cannot monitor the weather continuously. Therefore, at times there may be short delays in reporting some weather changes. However, during marginal weather conditions the current weather conditions are modified at intervals not exceeding every 20 minutes.

Cooperative Weather Watch (CWW) Program—The CWW program is where control tower personnel, trained and certified in local weather phenomena, and trained to take limited weather observations, assists the weather observer in monitoring weather conditions for significant changes.

Desired Lead Time (DLT)—Amount of advance notice an agency requires prior to the onset of a particular weather phenomenon.

Joint Air Force and Army Weather Information Network (JAAWIN)—Internet based weather information dissemination system.

Lightning—Lightning is a common phenomena at the Air Force Academy, especially during the spring and summer seasons. There have been over 90,000 lightning strikes within 15 nautical miles of the Academy since 1996. In 2001 alone, there were approximately 2,000 cloud to ground strikes within 5 nautical miles of the USAFA Airfield. Since lightning poses such a serious threat to life and property, an aggressive lightning watch, warning, and advisory program is in effect (see [paragraph 12.](#)). Lightning is found within cumulonimbus clouds (CB). There are four types of lightning: in cloud, cloud to cloud, cloud to ground, and cloud to air. All CBs have the potential to produce cloud to ground lightning. Observed lightning warnings will be issued for the Academy Airfield, Cadet Area, Jacks Valley and

Farish Recreational Area when visually spotted or detected with USAFAs lightning detection equipment. After-hour lightning warnings, issued by 25 OWS, will cover a 15 nautical miles radius, centered at 38.998N/104.856W (approximate center of the Academy).

Meteorological Aviation Report (METAR)—A routine scheduled observation as well as the primary observation code used by the United States to report meteorological data.

Meteorological Watch (METWATCH)—The process of monitoring the weather and informing designated agencies when specified weather conditions could impact operations or pose a hazard to property or life.

Mission Execution Forecast (MEF)—Customized, tactical-level weather information provided to support execution of military missions.

Military Operating Area Forecast (MOAF)—A text product which provides data as needed to develop a Mission Execution Forecast (MEF). It can be thought of as the “bigger” picture.

Observation—An evaluation of one or more meteorological elements that describe the current state of the atmosphere using observed or instrument derived data. Only certified weather observers for the USAF Academy evaluate such things as sky condition, prevailing and sector visibility, wind, atmospheric pressure, present weather, etc. Weather forecasters also perform radar observations using the WSR-88D Doppler weather radar to locate and evaluate precipitation and velocity echo returns.

Pilot Report—(PIREP) A report of meteorological phenomena encountered by an aircraft in flight.

Pilot to Metro Service (PMSV)—The method of contact from the supporting weather unit to in-flight aircrews (e.g., UHF radio, phone patch, etc.)

Range Control Forecast (RCF)—The official forecast for a specified range produced by the OWS in accordance with ACCI 15-150, Chapter 8.

Severe Weather Analysis Team (SWAT)—When severe weather (see paragraph 12.8.) is expected to occur at the Air Force Academy, the severe weather analysis team may be activated by the duty forecaster or the 25 OWS. The SWAT may consist of forecasters, observers, or the weather station supervisor. The goal of the SWAT is to provide the leadership and staffing necessary to ensure the Air Force Academy is warned with sufficient lead-time to prevent injury or loss of life and to protect Academy resources.

Significant Meteorological Information Advisory (SIGMET)—A NWS in-flight advisory of weather, other than convective activity, potentially hazardous to all aircraft.

Terminal Aerodrome Forecast (TAF)—A forecast of one or more meteorological elements determined by human and computer generated assessments of past, present, and future states of the atmosphere. TAFs are prepared by the Base Weather station forecasters for the USAF Academy Airfield Terminal Aerodrome Complex and are transmitted locally only via the local weather network. Academy TAFs are not amended when the airfield is closed. See [Attachment 7](#) for TAF specification and amendment criteria.

Toxic Corridor—When Base Readiness notifies Base Weather that a toxic substance was vented into the atmosphere; the prevailing wind will carry the substance in a pattern creating a toxic corridor. The toxic corridor represents the area within which the risk to personnel from excessive vapor concentrations exceeds an acceptable level as determined by health or other officials.

Urgent Upper Air (UUA) PIREP—A pilot report of in-flight weather encoded in accordance with

AFMAN 15-124, *Meteorological Codes*, and meeting severe weather criteria in accordance with AFMAN 15-129.

Weather Advisory (WA)—A special notice provided to a supported agency when an established weather condition that could affect operations is occurring or forecast to occur. Weather advisory may be issued as a forecast or observed weather advisory. All forecast advisories must be issued by a certified Academy Weather forecaster. Certified Academy observers may only issue observed weather advisories provided no time limit is appended.

Weather Warning (WW)—A special notice provided to supported agencies when established weather condition of such intensity as to pose a hazard to property or life, for which the supported agency must take protective action, is occurring or is forecast to occur. Only certified forecasters may issue weather warnings.

Weather Watch—A special notice provided to a supported agency to alert the agency that potential exists for a TORNADO, Severe Thunderstorm, High Wind (Greater or equal to 50 Knots), Heavy Snow, Freezing Precipitation, or Lightning. When a Weather Watch is issued, this means meteorological conditions are such that potential exists for rapid development of hazardous or weather warning criteria. All weather watches must be issued by a certified weather forecaster. The Academy Weather watch system allows Academy personnel enough time to secure government property and equipment so that, in the event of hazardous weather occurrence, property is safely secured and personnel are safely under cover when the required weather warning is issued. TORNADO and Severe Thunderstorm Watches may, at the discretion of the duty forecaster or Severe Weather Analysis Team (SWAT), mirror watches issued by the National Weather Service Storm Prediction Center or El Paso County watches issued by National Weather Service Forecast Office in Pueblo, CO.

Attachment 2

**DAVIS-MONTHON AFB, AZ
25TH OPERATIONAL WEATHER SQUADRON
(25 OWS)
POINTS-OF-CONTACT**

1. After hour aircrew briefing support:

DSN: 228-6598

Commercial: 520-228-6598

Toll Free: 877-451-8367

FAX/DSN: 228-6675

Web Requests: <https://25ows.dm.af.mil/aircrew>

2. After hour weather updates for the Academy (Official Business Only):

DSN: 228-6674 (Ask for the East Zone Forecaster)

STU-III: 228-6589

Web Site: <https://25ows.dm.af.mil>

Attachment 3

DISSEMINATION FORMATS

Use METAR code on the local dissemination system. Examples of commonly disseminated information are listed below:

A3.1. Surface Observations: HHmm (HH=HourZulu, mm=minutesZulu), PP.PP = pressure measurement in inches of mercury set on the altimeter subscale:

KAFF, METAR, HHmmZulu, wind direction/speed, visibility, sky condition, temperature/dew point, ALSTG PP.PP, remarks, PA, DA, minutes past the hour/observers initials.

Examples:

KAFF METAR 1955Z 02010KT 15 FEW070CB FEW200 25/06 ALSTG 30.40 RMK CB 12W MOV NE PA +6132 DA +8773 10/DH;

KAFF, LOCAL, HHMM, wind direction/speed, visibility, sky condition, temperature/dew point, ALSTG nn.nn, remarks, minutes past the hour/observers initials

KAFF LOCAL 1735Z 36013KT 15 FEW065 FEW110 BKN200 24/05 ALSTG 3043 RMK PA +6104 DA +8622 11/DH;

A3.2. Forecast:

KAFF FCST, DDHHhh (DD=Day, HH=Start HourZulu, hh=End HourZulu), wind direction/speed, visibility, sky condition, icing, turbulence, ALSTGnn.nnINS, remarks.

FM/BECMG/TEMPO HHhh, wind direction/speed, visibility, sky condition, icing, turbc, ALSTGnn.nnINS, remarks.

LAST NO AMDS AFT DDHH NEXT DDHH, issued time/forecasters initials:

KAFF TAF 182020 35015KT 9999 FEW065 FEW110 SCT250 520008 QNH3004INS
 BECMG 1920 04014KT 9999 VCTS FEW060CB FEW120 BKN250 520008 QNH3003INS
 FM 22 16012KT 9999 VCTS SCT050CB SCT120 BKN250 510008 QNH2996INS
 TEMPO 2302 VRB15G25KT 8000 -TSRAGS BKN050CB BKN120 BKN250
 BECMG 1516 16012KT 9999 NSW FEW100 SCT250 520008 QNH3007INS
 LAST NO AMDS AFT 1823 NEXT 1912 02/RAS;

A3.3. Alternate Base/City Forecasts:

The same format as KAFF (Academy Airfield) forecast illustrated in [A3.2](#).

A3.4. Weather Warnings:

WEATHER WARNING, VALID NUMBER
 VALID DD/HHMMZ (DD/HHMML) TO DD/HHMMZ(DD/HHMML)
 TEXT OF WARNING, ISSUED TIME/FORECASTERS INITIALS

Examples:

WEATHER WARNING 08-020
VALID 18/2101Z (18/1600L) TO 19/0000Z (18/1900L)
FOR 1/2" HAIL AND SFC WND VRB 20G40KTS FOR THE USAFA AFLD AND PROPER.
10/AC

WEATHER WARNING 06-021
VALID 18/2151Z (18/1651L) TO 19/0000Z (18/1900L)
FOR 1" HAIL AND SFC WND VRB 20G40KTS FOR THE USAFA AFLD AND PROPER.
10/MB

A3.5. Forecast Weather Advisory:

FORECAST WEATHER ADVISORY, VALID NUMBER
VALID DD/HHMMZ (DD/HHMML) TO DD/HHMMZ (DD/HHMML)
TEXT OF ADVISORY, ISSUED TIME/FORECASTERS INITIALS

Examples:

FORECAST WEATHER ADVISORY 09-001
VALID 18/2156Z (18/1656L) TO 19/0100Z (18/2000L)
FOR SFC WND SW-NW 15G26KTS FOR THE USAFA AFLD.
15/JR

FORECAST WEATHER ADVISORY 09-001
VALID 18/2156Z (18/1656L) TO 19/0100Z (18/2000L)
FOR LGT-MDT TURBULENCE SFC-080 AGL FOR THE USAFA AFLD.
15/RB

A3.6. Observed Weather Advisory (UFN=UNTIL FURTHER NOTICE):

OBSERVED WEATHER ADVISORY, VALID NUMBER
VALID DD/HHMMZ (DD/HHMML) TO UFN
TEXT OF ADVISORY, ISSUED TIME/OBSERVERS INITIALS

Examples:

OBSERVED WEATHER ADVISORY 10-107
VALID 09/2201Z (09/1701L) TO UFN (UFN)
X-WND COMP GREATER THAN 15 KTS
(WND 270/19)(WND 200V330)
(X-WND COMP = 19 KTS)
01/LH

OBSERVED WEATHER ADVISORY 02-054
VALID 18/2206Z (18/1706L) TO UFN (UFN)
DA GREATER THAN OR EQUAL TO 9500 FT
(DA +9700)
06/CM

A3.7. PIREPS:

KAFF UA /UUA LOCATION/PIREP TIME HHMMZ/FLIGHT LEVEL (FL)/TYPE AIRCRAFT (TP)/HAZARD/WEATHER/ADDITIONAL REMARKS (RM)

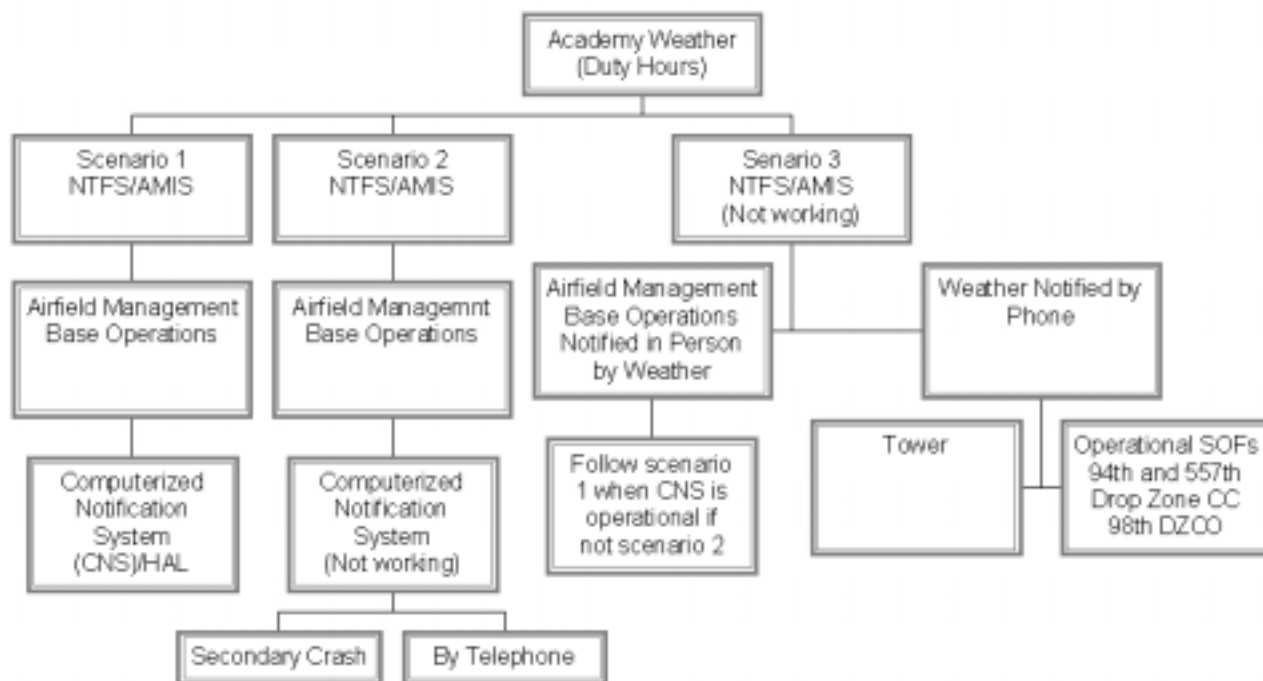
Examples:

KAFF UA /OV KCOS270009/TM 2100/FL170/TP UV18/SK SCT070/TB LGT BLO 085;

KAFF UUA /OV KCOS270009/TM 2100/FL010/TP UV18/SK SCT070/IC NEG/RM LLWS LOST 30 KTS DURGD.

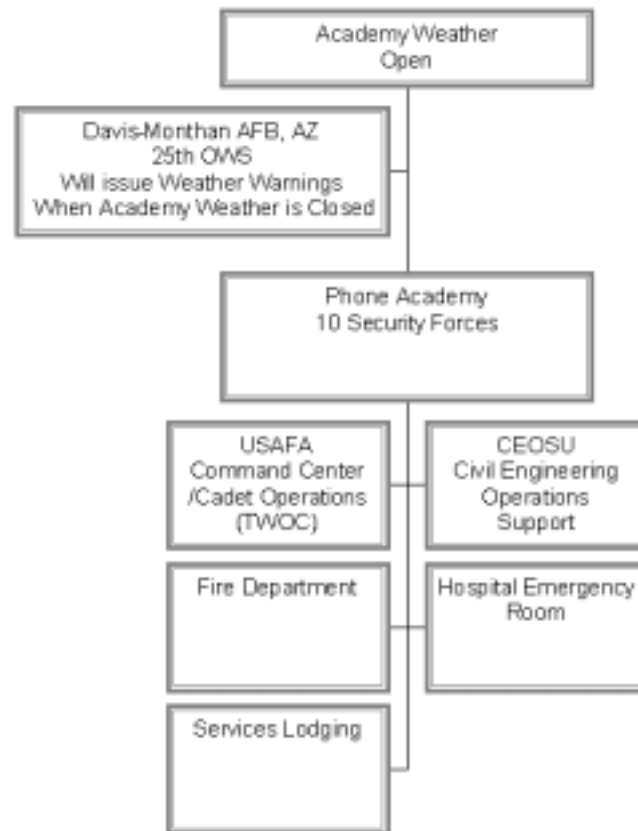
Attachment 4

**PRIMARY WEATHER WARNING, WATCH, AND ADVISORY
NOTIFICATION FLOW CHART
(WHEN BASE OPERATIONS IS OPEN)**



Attachment 5

**PRIMARY WEATHER WARNING, WATCH AND ADVISORY
NOTIFICATION FLOW CHART
(WHEN BASE OPERATIONS IS CLOSED)**



Attachment 6

SPECI (SPECIAL) AND LOCAL CRITERIA

A6.1. Special (SPECI) Criteria for Weather Observations in accordance with AFMAN 15-111, Surface Weather Observations, and USAFA requirements (NOTE** when the Academy Airfield is closed, SPECI Criteria are limited to those in paragraphs [A6.1.1.4.](#), [A6.1.1.5.](#), [A6.1.1.6.](#), [A6.1.1.7.](#), [A6.1.1.8.](#), and [A6.1.1.11.](#)):**

A6.1.1. Take a Special Observation (SPECI) When Any of the Following Criteria are Met:

A6.1.1.1. Ceiling Decreases to Less Than, or Increases to Equal or Exceed:

A6.1.1.1.1. 3,000 feet.

A6.1.1.1.2. 1,500 feet.

A6.1.1.1.3. 1,000 feet.

A6.1.1.1.4. 700 feet.

A6.1.1.1.5. 500 feet.

A6.1.1.2. Clouds. A layer of clouds or obscuring phenomena aloft is first observed below 1,000 feet and no layer aloft was reported below 1,000 feet in the previous METAR or SPECI observation.

A6.1.1.3. Visibility Decreases to Less Than, or Increases to Equal or Exceed:

A6.1.1.3.1. 3 miles.

A6.1.1.3.2. 2 miles.

A6.1.1.3.3. 1 mile.

A6.1.1.4. TORNADO. A TORNADO or Funnel Cloud (FC) is observed or disappears from sight. A TORNADO or Funnel Cloud SPECI may be transmitted as a Single Element SPECI, as time and safety permit.

A6.1.1.5. Thunderstorms. When they begin or end.

A6.1.1.6. Precipitation. Precipitation begins or ends; hail begins or ends; freezing precipitation begins, ends, or changes in intensity; ice pellets begin, end, or change intensity.

A6.1.1.7. Squall. A strong wind characterized by a sudden onset in which the wind speed increases by at least 16 knots and is sustained at 22 knots or more for at least 1 minute.

A6.1.1.8. Wind Shift. Any wind change of 45 degrees or more in less than 15 minutes when the wind speed is 10 knots or more.

A6.1.1.9. Runway Conditions. Upon receipt from Base Operations, weather will transmit a SPECI or append to the METAR observation the current runway condition when the runway condition has changed from Dry to another condition. When the runway condition is reported as DRY, a LOCAL observation will be taken.

A6.1.1.10. Tower Visibility. When either Base Weather's or the Tower's prevailing visibility is 4 miles (or less), and Base Weather's and tower's prevailing visibility differs by a reportable value, a SPECI will be taken.

A6.1.1.11. Miscellaneous criteria. SPECI observations will be taken if a real-world nuclear accident occurs, volcanic ash is observed, or any other situation which in the opinion of the duty observer is significant to airfield operations or safety.

A6.2. Local Criteria. When the airfield is closed, Academy Weather will not take LOCAL observations except for the single element Altimeter setting LOCAL (since the flying club may still be active, and they have access to AWDS/AMIS readings). LOCAL criteria are as follows:

A6.2.1. Notification of aircraft mishap.

A6.2.2. When notified in a change in Active Runway. Runway 26 is not instrumented. When Runway 26 is the active runway, wind and ceiling (when ceiling measurements are below 12,000 feet AGL) observations may be estimated, at the discretion of the duty observer, for Runway 26.

A6.2.3. Altimeter setting (ALSTG) at a frequency not to exceed 35 minutes since the last observation when there has been a change of at least .01 inches. May be taken as a single element LOCAL.

A6.2.4. Ceiling and Visibility Criteria:

A6.2.4.1. Ceiling decreases to less than, or increases to equal or exceed:

A6.2.4.1.1. 2,500 feet AGL.

A6.2.4.1.2. 2,000 feet AGL.

A6.2.4.2. Visibility decreases to less than or increases to equal or exceed 5 statute miles.

A6.2.5. Any other meteorological situation, which in the opinion of the observer, is significant to local operations.

Attachment 7**TERMINAL FORECAST SPECIFICATION AND AMENDMENT CRITERIA**

A7.1. General. A 24-hour terminal forecast is issued for USAFA at least 1 hour, to the nearest whole hour, before the start of airfield operations and every 6 hours thereafter. For example, if the airfield opens at 0530L, the 1st TAF of the day will be issued at 0400L, plus each 6 hours. If the airfield opens at 0715L, the 1st TAF of the day will be issued at 0600L, plus each 6 hours. The Academy TAF applies to an area within a 5 statute miles radius of the center of the runway complex. The forecast will specify the time of occurrence to the nearest hour, the duration, and the intensity, where applicable, for the following weather elements:

Specification Criteria

A7.1.1. Ceiling or visibility increased to equal or exceed, or decreased to less than any of the following values (in accordance with AFMAN 15-124, and USAFA VFR Airfield Requirements):

Ceiling	Visibility
3,000 feet	5 miles
1,500 feet	3 miles
1,000 feet	

A7.1.2. Wind:

A7.1.2.1. Speed changes of 10 knots or more.

A7.1.2.2. Direction changes of greater than 30 degrees or more when the predominant wind speed or gusts is expected to be in excess of 15 knots.

A7.1.2.3. Forecast will specify the beginning end time of 19 Knot, 25 Knot, 35 Knot, and 50 Knot wind (either sustained or gusts).

A7.1.3. Precipitation (beginning and ending) that causes visibility to increase to equal or exceed, or decrease to less than 3 or 5 statute miles.

A7.1.4. Locally established warning and forecast advisory criteria.

A7.1.5. Any Icing or turbulence from the surface to 15,000 feet mean sea level (9,000 feet AGL) not associated with thunderstorms. Turbulence severity is based on category I aircraft.

A7.1.6. Non-convective low-level WSCONDS.

A7.2. Forecast Amendments. Amendments are unscheduled forecasts that revise the content of the current forecast. Amendments will be issued to cover the remaining period of the initial forecast. Forecasts will be amended whenever a forecast change of the criteria listed below is expected to occur, or occurs, and is expected to last at least 30 minutes and is not correctly forecast by the next cardinal hour. Amendments will also be issued whenever a forecast change of any of the criteria listed below does not occur by the hour specified in the forecast and is not expected to occur with the next 30 minutes. In addition, the forecaster will amend a forecast anytime the forecaster believes it does not represent actual or expected

conditions for safety of flight, flight planning, or to assist aircraft in-flight. Forecast Amendments will not be issued when the Airfield is closed. Amendment categories and criteria are as follows:

A7.2.1. Ceiling and Visibility Criteria:

3,000 feet

1,500 feet/3 miles

1,000 feet

A7.2.2. Wind Speed. A forecast wind speed error of 10 knots or more or a direction error of greater than 30 degrees or more when the predominant wind speed or gust is, or is forecast to be, in excess of 15 knots.

A7.2.3. Precipitation:

A7.2.3.1. The beginning or ending of freezing precipitation not specified in the forecast.

A7.2.3.2. The beginning or ending of precipitation that causes a WW to be issued, canceled, or amended.

A7.2.4. When locally established airfield warning criteria:

A7.2.4.1. Occur, or are expected to occur during the forecast period, but were not specified in the forecast.

A7.2.4.2. Were specified in the forecast, but are no longer occurring or expected to occur during the forecast period.

A7.2.5. Airfield Warning Criteria:

A7.2.5.1. When locally established airfield warning criteria occur, or are expected to occur, during the forecast period but were not specified in the forecast.

A7.2.5.2. Locally established airfield warning criteria were specified in the forecast but are no longer occurring or expected to occur during the forecast period.

A7.2.6. Low-Level Wind Shear. Non-convective low-level wind shear conditions are occurring and are expected to continue, or are expected to begin, but are not specified in the forecast.

A7.2.7. Turbulence. The beginning or ending of moderate or greater turbulence, or any icing, below 15,000 feet MSL, which was not specified in the forecast.

Attachment 8

WEATHER NOTIFICATION MATRIX

If the advisory/warning is for lightning within 5nm of Jack's Valley the Command Post will activate the sirens for Jack's Valley (from 1 Jun - 31 Aug or whenever personnel are in the Valley).

	Lightning w/i 5nm of Airfield	Lightning w/i 5nm of Jack's/ stadium	Lightning w/i 5nm of Cadet Area	Lightning w/i 5nm of Farrish	Lightning w/i 15nm of the Academy	Other Watch/ Warning/ Advisory	After Duty Hrs WX Notification
34TRW Ops Center X2910		X	X		X		X
Survival Training X4460	X			X	X		X
Golf Course X2761			X		X	X	
AH Training Rm X2187			X		X		
CE Service Desk X2790	X		X		X	X	
10 LG X4480	X				X		
SFS Desk X2000	X	X	X	X	X	X	X
DOS Aviation 472-5932	X					X	
PL X2583	X						
Gym X4522	X		X			X	X
Fire Sta. #3 X4433	X						X
10 ABW Secretary X1010	X					X	
Aviation Fuels X3845	X					X	

	Lightning w/i 5nm of Airfield	Lightning w/i 5nm of Jack's/ stadium	Lightning w/i 5nm of Cadet Area	Lightning w/i 5nm of Farrish	Lightning w/i 15nm of the Academy	Other Watch/ Warning/ Advisory	After Duty Hrs WX Notification
Commissary X2227	X						
Comm Center X8262	X						X
Equestrian Club X3879	X						
AH Training X2527			X		X		
Arnold Hall CQ X4790			X				
Rifle Range X4449			X				
ER X5000			X			X	X
34 TRW/CC X4290			X			X	
34 TRG X2220			X				
Farrish X9098				X			
Base Ops X2343	X	X	X	X	X	X	
Command Ctr. X2633	X	X	X	X	X	X	
Football Stadium X1151		X (seasonal)					
Stadium Cell 661-X5837		X (seasonal)					
CE X6948		X					
Jack's Valley CP X7904		X					
Global Engagement X9127		X					

	Lightning w/i 5nm of Airfield	Lightning w/i 5nm of Jack's/ stadium	Lightning w/i 5nm of Cadet Area	Lightning w/i 5nm of Farrish	Lightning w/i 15nm of the Academy	Other Watch/ Warning/ Advisory	After Duty Hrs WX Notification
GE Cell 440-6327		X					
Field House X2145		X					
Red Flag TNG X5735		X					
Red Flag TNG X7919		X					
Cadet Clinic X5180							
557 th FTS X3655						X	
Safety X3205						X	
Public Affairs X4050						X	
COMM CTR Chaplain X3300						X	
Base Fuels X2924						X	
Base Contracting X2076						X	
Sports Supv. 338-5518						X	
Commissary after hours X2329							X
CE EMCS X4426							X
Outdoor Pool X2399	X	X	X	X	X	X	X
Cadet Clinic X5180						X	

	Lightning w/i 5nm of Airfield	Lightning w/i 5nm of Jack's/ stadium	Lightning w/i 5nm of Cadet Area	Lightning w/i 5nm of Farrish	Lightning w/i 15nm of the Academy	Other Watch/ Warning/ Advisory	After Duty Hrs WX Notification
DOS Aviation X2625	X					X	
Base Weather X2058	X	X	X	X	X	X	
MISC. CELL PHONES							
338-0804			X				
338-8048			X				
338-5077			X				
Ted Wiegman 440-6020	X	X	X	X	X	X	X
Joe Novak 338-5077	X	X	X	X	X	X	X
Dir. of Events 338-5077			X				

Attachment 9

NTFS/AWDS/AMIS
CONTACTS / OPRS

1. AWDS FO/ATC Customers:

TERMINAL	LOCATION	POC	PHONE	BLDG	DATA SET
ATC00	Tower	34 OSS/OSAT	3-2392	9212	1
ATC01	Midfield RSU	34 OSS/OSAT	3-2392	9229	1
FOP00	Mfld Class Rm	94 FTS/DO	3-3075	9232	1
FOP02	Para DZCO	98 FTS/DO	3-4278	9202	3
FOP04	Computer Rm	34 OSS/OSW	3-2058	9206	3
FOP06	Met Lab	USAF/DFEG	3-8736	2354	1
FOP07	557 th Ops	557 FTS/DO	3-7602	9202	1
FOP10	Aero Club	Aero Club Mgr	3-4252	9222	1

Data Sets:

1 KAPA KBKF KCOS KFCS KPUB
3 KCOS KFCS KPEF KPUB

2. AMIS Software Customers:

LOGIN	POC	PHONE	OFF-BASE
21oss	21 OSS/OSW	C556-7624	Peterson AFB
25ows1-5	25 OWS/DO	D228-1966	Davis-Monthan AFB
557 th	557 FTS/DO	3-2037	
94FTFOPS	94 FTS/DO	3-3744	
98 th	98 FTS/DO	3-4278	
OGCC	34 OG/CC	3-3330	
OGDO	34 OG/CD	3-3330	
OSSCC	34 OSS/CC	3-3389	
OSSDO	34 OSS/DO	3-9316	
TRWSE	34 TRW/SEF	3-9306	
Aeroclub	Aero Club	3-4252	
atc	34 OSS/OSAT	3-2392	
baseops	34 OSS/OSAA	3-2526	
gh	34 OSS/OSQ	3-2537	
kpef	21 OSS/OSW	C556-7624	Peterson AFB
opcenter	10 ABW/CP	3-2910	
para	98 FTS/DO	3-4278	
ruth	DOS Aviation	C 472-5935	DOS Aviation
skyt	34 OSS/OSAT	3-2392	
soaring	94 FTS/DO	3-3744	
tower	34 OSS/OSAT	3-2392	